

What is claimed is:

1. A gas turbine engine comprising rotary members which rotate together with a rotary shaft and a casing which surrounds said rotary members,

wherein said casing has, on a surface thereof, a coating which has a hardness lower than that of a material of said rotary members, and

said coating has a porosity of 5% to 30% by volume and an oxygen content of not more than 2% by weight.

2. The gas turbine engine according to claim 1, wherein said coating is composed of an alloy of M-Cr-Al-Y provided that M represents Ni, Co, or Ni-Co.

3. The gas turbine engine according to claim 1, wherein said rotary member is a turbine blade, and said casing is a shroud.

4. The gas turbine engine according to claim 1, further comprising an intermediate layer which is disposed between said casing and said coating in order to absorb a difference in coefficient of thermal expansion.

5. The gas turbine engine according to claim 1, wherein said porosity of said coating is 10% by volume.

6. The gas turbine engine according to claim 1,  
wherein said coating is made of stabilized zirconia.

7. The gas turbine engine according to claim 2,  
wherein said coating is composed of an alloy of Co-32%Ni-  
21%Cr-7.5%Al-0.5%Y provided that numerals indicate percent  
by weight.

8. A method of producing a gas turbine engine having  
rotary members which rotates together with a rotary shaft  
and a casing which surrounds said rotary members, said  
method comprising the step of:

forming a coating by thermally spraying a raw material  
powder onto a surface of said casing by a high velocity  
oxygen-fuel thermal spray method, said raw material powder  
having particle sizes of not more than 125  $\mu\text{m}$ .

9. The method of producing said gas turbine engine  
according to claim 8, wherein raw material powder has  
particle sizes of not more than 75  $\mu\text{m}$ .

10. The method of producing said gas turbine engine  
according to claim 8, wherein a powder of an alloy of M-Cr-  
Al-Y is used as said raw material powder provided that M  
represents Ni, Co, or Ni-Co.

11. The method of producing said gas turbine engine

according to claim 8, wherein said rotary member is a turbine blade, and said casing is a shroud.

5        12. The method of producing said gas turbine engine according to claim 8, further comprising a step of forming an intermediate layer before forming said coating in order to absorb a difference in coefficient of thermal expansion.

10       13. The method of producing said gas turbine engine according to claim 8, wherein a powder of stabilized zirconia is used as said raw material powder.

15       14. The method of producing said gas turbine engine according to claim 10, wherein a powder of an alloy of Co-32%Ni-21%Cr-7.5%Al-0.5%Y is used as said raw material powder provided that numerals indicate percent by weight.